Towards Clean And Low Carbon Mobility: Reducing real world emissions

Our questions today......

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Towards Clean And Low Carbon Mobility: Addressing affordability of sustainable transport and reducing real world emissions

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Growth rate in energy consumption in different sectors of India (CAGR 2000-2013)

- Growth rate for energy consumption is expected to be highest in the transport sector compared to all other sectors of industry, buildings, agriculture, and other uses. This demands aggressive and stringent roadmap at the current level of growth.
The challenge of meeting clean air standards in Indian cities......
Toxic Air
More cities in grip of critical level of PM10

Source: Centre for Science and Environment of CPCB air quality data submitted to Rajya Sabha for 44 cities
Mixed and worrying trends across cities

PM10 concentration in six mega cities—way above the standard

PM10 concentration in metropolitan cities

*Data available since 2011

Source: Computed by CSE from CPCB air quality data submitted to Rajya Sabha for 44 cities and CPCB the ENVIS centre
Mixed and worrying trends across cities

NO2 concentration in six mega cities

NO2 concentration in six metropolitan cities

Source: Computed by CSE from CPCB air quality data submitted to Rajya Sabha for 44 cities and CPCB the ENVIS centre
Reduction targets to meet PM 10 standards

In terms of PM2.5 Delhi needs to reduce annual average level by 74%

Source: Centre for Science and Environment of CPCB air quality data submitted to Rajya Sabha for 44 cities
Action builds up in Delhi-NCR to bend the curve

Analysis of CPCB’s Daily AQI bulletin for Delhi 2017-18 and 2016-17

Source: CSE’s analysis of CPCB AQI data
Action in Delhi

Industry
-- Delhi to become coal power free this October: Badarpur power plant that remains shut during winter to shut down permanently
-- Use of dirty petcoke and furnace oil banned
-- List of approved fuels notified
-- Large scale conversion of brick kilns to improved technology in NCR

Vehicles
-- BSIV emissions standards: BSVI in 2020
-- 10 ppm sulphur fuels introduced; expansion of CNG programme in NCR
-- Restriction on tuck entry; environment pollution charge, RFID
-- Environment pollution charge on big diesel cars and SUVs
-- Phase out of old vehicles
-- Revamp of PUC system

Action on construction dust and waste burning etc

Clean air action plan
-- Implementation of Graded Response Action Plan
-- Notification of Comprehensive Clean Air Action plan

Action in Delhi to inform National Clean Air programme; learning from others
Next big transition in vehicle sector: Addressing real world emissions, in-service compliance and on-road emissions management............
Legal mandate for compliance and monitoring in Delhi-NCR

March 6, 2018: CPCB notified CAP for Air Pollution Control In Delhi and NCR under Section 3 and Section 5 of The Environmental (Protection) Act, 1986.

On-Road Vehicles

- **Link PUC certificates with annual vehicle insurance** to ensure 100 per cent compliance.
- **Auditing of Pollution under Control (PUC) certification centres**
- **Tighten PUC norms for post-2000 vehicles.**
- **Upgradation of in-use emissions testing for diesel vehicles**
- **Enforcement of law against visibly polluting vehicles**
- **Implement an on-board diagnostic system fitted in new vehicles for vehicle inspection**
- Delhi to review and upgrade the Burari commercial vehicle testing centre.
- **Ensure requisite infrastructure for hydro testing of CNG cylinders in Delhi and NCR**
- **Install vapour recovery systems in fuel refueling outlets**
A fake PUC certificate was issued for the decoy diesel vehicle by the PUC centre which did not have any test equipment.

There was no testing equipment in this centre at the time of inspection. It only had a computer and printer to issue PUC certificate.
New generation challenge

New Vehicles

- On-schedule implementation of BS VI fuel and emission standards.
- (SC takes on board PEMS based RDE test)
- **Action on dieselization**: Imposition of 1% EPC on big diesel vehicles
- Expand CNG programme across NCR: taxis to convert to CNG
- **Electric vehicle programme**: targeted segments of two-wheelers, three-wheelers and buses.

Bigger interest in paradigm shift in in-use management systems

**SC order dated May 10, 2018 with regard to remote sensing**: It was stated that remote sensing screening of emissions has been found to be extremely effective

- Integration of On-board diagnostic systems with regular emissions inspection
- Introduction of 10 ppm sulphur fuels and retrofitment
- Sticker policy for cars; Interest in low emissions zones
- Phase out of old vehicles – scrappage policy
-- How dual challenge of air pollution and greenhouse gas mitigation will influence our technology roadmap?

-- Why emissions standards and fuel economy standards need to be equally stringent to accelerate roadmap towards clean emissions and zero emissions mandate?
Implementation of fuel economy regulations?


-- Compliance procedure for these standards complex: Relies entirely on self reporting by the automobile industry.

-- Requires each car manufacturer to report annually about the certified fuel economy level of each and every make and model of vehicle sold during the year, their curb weight and the total number of units sold at the end of each year i.e. May 31st.

-- Based on this information the designated agency will calculate the sales weighted corporate average fuel economy level of their fleet sold in a year to verify if each and every manufacturer comply with the standards.

Worries

MORTH rules do not require public disclosure system – like the US and Europe

There is no penalty provision; Only Ministries to be informed if any deviation
Weak standards
Need tighter standards to push the roadmap towards zero emissions mandate

-- Standards are further weakened -- Manufacturers allowed to score points for adopting other ineffective technologies hoping these will allow fuel savings that cannot be quantified in certification testing. Eg -- tyre pressure monitoring system, speed transmission, real time fuel economy indicator, start and stop system, etc.

-- Need tighter fuel economy standards to quicken roadmap to advanced technologies and zero emissions mandate
-- June 2018, MORTH report to NITI Aayog asks for tightening of fuel efficiency norms for passenger cars to promote higher production of electric vehicles as a percentage of each manufacturer’s total production

Why so weak benchmark for emissions based taxation?
-- New proposal: Draft Auto Fuel policy – CO2 emissions based cess over GST rate on cars (eg 4m and above) – linked to lesser or more than 155 gm/km of CO2. -- But corporate fuel economy standards for cars is 134 gm/km; it will be 113 gm/km in 2023
Need certainty on electric mobility roadmap.............

Why flip flop on electric mobility?
   From mild hybrids to buses and para transit and back to cars; No clarity on targets and mandate and infrastructure development. More new proposals....

How can India leverage win-win strategy of clean buses and zero emission mandate?
   Diverse cleaner fuels in cities now – Clean diesel, CNG, bio fuels, H-CNG, Electric buses....

What is the global learning on EV bus trajectory?

What is the experience with EV buses in Indian cities?
How to inform this programme
Need certainty in roadmap, targets and zero emissions mandate
Let's begin the conversation....